**IT Applications Unit 3, AOS 2, Organisations and Data Management**

**Structure and role of relational databases, p 101**

**Describe the following relationships in a relational database.**

1. One-to-one relationship

This type of relationship is used when one record in one table connects to one and only one record in a second table. For example an airlines passenger details table will contain many records for passengers, while a seat allocation table holds records related to the seats on a particular flight. A one-to-one relationship exists between a passenger and their seat allocation. Each passenger only has one seat and each seat only has one passenger.

1. One-to-many relationship

This type of relationship is used when one record in the first table can be connected to more than one record in the second table. For example several workers in an office share a single telephone extension. Each extension record is related to several employees’ records.

1. Many-to-many relationship

This type of relationship is used when each record in the first table can be connected to a number of records in the second table. At the same time many each record in the second table may be related to many records in the first table. For example a student details table and a subject details table have a many-to-many relationship as each student has many subjects and each subject has many students.

**Determining a RDBMS structure**

Need to determine which field in each database will be the primary key

1. What are the roles of foreign keys?

The role of a foreign key is to ensure that when you enter data into a table it already has a corresponding value in another.

**Read the document, Primary keys/ foreign keys**

1. Describe the characteristics of a foreign key.

What is meant by referential integrity?

Referential integrity is a database concept that ensures relationships between tables remain consistent. Referential integrity states that when a table has a foreign key you may not add a record to that table that contains the foreign key unless there is already a corresponding record in the linked table. Referential integrity also uses the techniques cascading update and cascading delete, this ensures that when changes are made to the linked table they are reflected in the primary table.

**Table normalisation**

1. What is the role of table normalisation?

The role of table normalisation is to give that database designer a tool that ensures data integrity is maintained when that data is broken down into the required fields and tables.

1. There are six “normal forms”, each rule applied successively from the first normal form, (1NF).
2. Describe the nature of the following three “normal forms”.
   1. First normal form, (1NF)

The first normal form states that at each field and record interception there is only one values, not a list of values. For example in a stock database, each product’s “Price” field contains only one price not several prices.

* 1. Second normal form, (2NF)

The second normal form is for situations in which you have more than one primary key field in a table, each non-key must be fully dependent on the key not just partly dependent.

* 1. Third normal form, (3NF)

To be compliant with the third normal form, every field in a table must relate directly to the primary key.

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**Read the article, normalisation for more explanation of this process.**